Lloyd's
Register

Rules and Regulations for the Classification of Ships, July 2013

Notice No. 5

Effective Date of Latest Amendments:

See page 1

Issue date: December 2013

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RULES AND REGULATIONS FOR THE CLASSIFICATION OF SHIPS, *July 2013*

Notice No. 5

This Notice contains amendments within the following Sections of the *Rules and Regulations for the Classification of Ships, July 2013.* The amendments are effective on the dates shown:

Part	***Chapter***	***Section***	***Effective date***
1	2	3	1 January 2014
1	3	6, 7, 8	1 January 2014
3	2	3	1 January 2014
4	8	2	1 January 2014

It will be noted that the amendments also include corrigenda, which are effective from the date of this Notice.

The *Rules and Regulations for the Classification of Ships, July 2013* are to be read in conjunction with this Notice No. 5. The status of the Rules is now:

Rules for Ships	Effective date:	July 2013
Notice No. 1	Effective date:	1 July 2013
Notice No. 2	Effective date:	1 August 2013 & Corrigenda
Notice No. 3	Effective date:	1 September 2013 & 1 January 2014
Notice No. 4	Effective date:	1 September 2013
Notice No. 5	Effective date:	1 January 2014

Part 1, Chapter 2

Classification Regulations

Effective date 1 January 2014

■ *Section 3*

Surveys – General

3.5 Existing ships – Periodical Surveys

3.5.13 Ships which have satisfactorily passed a Special Survey will have a record entered in the *Register Book* indicating the date and the notation **ESP** if this is applicable, *see* 2.3.12. Where the Special Survey is completed more than three months before the due date, the new record of Special Survey will be the final date of survey. ~~In all other cases the date recorded will be the fifth anniversary.~~

(a) In all other cases, with the exception of (b), the date recorded will be the fifth anniversary of the previous Special Survey.

(b) For ships registered with Flag Administrations that have neither implemented the International Convention for the Safety of Life at Sea (SOLAS 1974) Harmonised System of Survey and Certification (HSSC) under the Protocol of 1988, nor adopted HSSC under IMO Resolution A.883 (21) – *Global and Uniform Implementation of the Harmonised System of Survey and Certification*, where the Special Survey is completed before the due date, the new record will be the final date of survey.

3.5.16 Complete Surveys of machinery become due at five-yearly intervals, the first one five years from the date of build or date of first classification as recorded in ClassDirect Live, and thereafter five years from the date recorded for the previous Complete Survey. Consideration can be given at the discretion of the Classification Committee to any exceptional circumstances justifying an extension of machinery class to a maximum of three months beyond the fifth year. If an extension is agreed, the next period of machinery class will start from the due date of Complete Survey of machinery before extension was granted. Surveys which are commenced prior to their due date are not to extend over a period greater than 15 months, except with the prior approval of the Classification Committee. Where the survey is completed more than three months before the due date, the recorded date of completion will be the final date of survey. ~~In all other cases the date recorded will be the fifth anniversary.~~

(a) In all other cases, with the exception of (b), the date recorded will be the fifth anniversary of the previous Complete Survey of machinery.

(b) For ships registered with Flag Administrations that have neither implemented the International Convention for the Safety of Life at Sea (SOLAS 1974) Harmonised System of Survey and Certification (HSSC) under the Protocol of 1988, nor adopted HSSC under IMO Resolution A.883 (21) – *Global and Uniform Implementation of the Harmonised System of Survey and Certification*, where the Survey is completed before the due date, the new record will be the final date of survey.

Part 1, Chapter 3

Periodical Survey Regulations

Effective date 1 January 2014

■ *Section 6*

Special Survey – Bulk carriers – Hull requirements

6.2 Documentation

(*Part only shown*)

6.2.1 The Owner is to obtain, supply and maintain documentation on board as follows:

(a) A survey file comprising reports of structural surveys, thickness measurement and executive hull summary in accordance with ~~IMO Resolution A.744(18)~~ the 2011 ESP Code.

■ *Section 7*

Special Survey – Oil tankers (including ore/oil ships and ore/bulk/oil ships) – Hull requirements

7.2 Documentation

(*Part only shown*)

7.2.1 The Owner is to obtain, supply and maintain documentation on board as follows:

(a) A survey file comprising reports of structural surveys, thickness measurement and executive hull summary in accordance with ~~IMO Resolution A.744(18)~~ the 2011 ESP Code.

■ *Section 8*
Special Survey – Chemical tankers – Hull requirements

8.2 Documentation

(*Part only shown*)

8.2.1 The Owner is to obtain, supply and maintain documentation on board as follows:

(a) A survey file comprising reports of structural surveys, thickness measurement and executive hull summary in accordance with ~~IMO Resolution A.744(18)~~ the 2011 ESP Code.

Part 3, Chapter 2
Materials

Effective date 1 January 2014

■ *Section 3*
Corrosion protection

3.2 Prefabrication primers

3.2.6 ~~In ships intended for the carriage of oil cargoes having a flash point not exceeding 60°C (closed cup test), paint containing aluminium should not, in general, be used in positions where cargo vapours may accumulate, unless it has been shown by appropriate tests that the paint to be used does not increase the incendive sparking hazard.~~ Aluminium coatings intended for oil tankers and chemical tankers used in way of the cargo oil tanks, cargo tank deck areas, pump-rooms, cofferdams or any other area where oil vapour may accumulate are to be coated using systems containing less than 10 per cent aluminium by weight in the dry film.

Part 4, Chapter 8
Container Ships

Effective date 1 January 2014

■ *Section 2*
Materials

2.3 Requirements for use of thick steel plates

2.3.1 This Section provides the requirements for crack arrest design to reduce the risk of brittle fractures in container ships where thick steel plates are applied for longitudinal structural members within the cargo hold region.

2.3.2 This Section is to be applied to container ships where the steel plates for longitudinal structural members exceed a thickness of 50 mm but are not greater than 100 mm. Special consideration is required for plates with a thickness exceeding 100 mm.

2.3.3 This Section applies to plates having specified minimum yield strength of 355, 390 and 460 N/mm^2. Steels and weldments are to comply with the toughness requirements of Chapters 3, 11 and 12 of the *Rules for the Manufacture, Testing and Certification of Materials* (hereinafter referred to as the Rules for Materials).

2.3.4 The approach in this Section generally applies to the erection block-to-block joints. Appropriate measures are to be considered to prevent large scale fracture of the hull girder in anticipation of the following:

(a) Crack initiation in the block-to-block butt weld joint in either the hatch side coaming or upper deck. Crack propagates along the butt weld joint without deviation.
(b) Crack initiation in the block-to-block butt weld joint in either the hatch side coaming or upper deck. Crack propagates away from the butt weld joint running into base metal.
(c) Crack initiation in any welded joint, for example in way of attachment welds, and deviates away from the butt weld joint running into base metal.

2.3.5 The detailed arrangements for crack arrest design are to be submitted for approval.

2.3.6 Where Measure 1 is required in Table 8.2.1, 100 per cent ultrasonic testing of all subject block-to-block welds is to be carried out in accordance with the requirements of Ch 13, 2.12 of the Rules for Materials.

2.3.7 The following are considered to be acceptable examples of brittle crack arrest design for the case given in 2.3.4(a) and (b):

(a) Where the block-to-block butt welds of the hatch side coaming and those of the upper deck are staggered, this offset is to be greater than or equal to 300 mm. Brittle crack arrest steel is to be provided for the hatch side coaming.
(b) Where crack arrest holes are provided in way of the block-to-block butt welds at the region where hatch side coaming weld meets the deck weld. The corners of the crack arrest holes located where the hatch side coaming joints meet the deck weld are to be specially assessed for fatigue strength. The fatigue strength is also to be assessed at the location where the block-to-block butt weld intersects the crack arrest hole. Brittle crack arrest steel, as defined in 2.3.9, is to be provided for the hatch side coaming.
(c) Where higher crack arrest steel insert plates such as SUF (Surface Layer with Ultra-Fine grain) steel or equivalent, or weld metal inserts with high crack arrest toughness properties are provided in way of the block-to-block butt welds at the region where hatch side coaming weld meets the deck weld. Brittle crack arrest steel, as defined in 2.3.9, is to be provided for the hatch side coaming.

2.3.8 For the case given in 2.3.4(c), brittle crack arrest steel, as defined in 2.3.9, is to be used for the upper deck along the cargo hold region to arrest a brittle crack initiating from the coaming and propagating into the structure below.

2.3.9 Brittle crack arrest steel is defined as steel plate with measured crack arrest properties, K_{ca} 6,000 N/mm$^{3/2}$ at –10°C or other methods based on the determination of Crack Arrest Temperature (CAT). Where the thickness of the steel exceeds 80 mm the required K_{ca} value or alternative crack arrest parameter for the brittle crack arrest steel plate is to be specifically agreed with LR.

2.3.10 Where higher crack arrest steel or weld inserts are proposed, as given in 2.3.7(c), the specific properties or grades of material are to be agreed with LR.

2.3.11 As an alternative to crack arrest design, design based on crack initiation may be considered. Design based on this approach aims to prevent any defect from propagating into a brittle fracture by ensuring that no defect exists above a calculated size in the weld either during construction or subsequently in service. This size is determined by way of an Engineering Critical Assessment (ECA) which must be carried out and submitted to LR prior to construction. The ECA will determine the minimum acceptable defect size from both fatigue crack growth and fracture mechanics calculations. The detectability of such a defect in the structure will also need to be proven to LR. This can only be achieved through assessment of the non-destructive examination techniques and procedures to be applied. It is anticipated that, for this approach to be successful, the application of advanced NDT, such as the Time of Flight Diffraction (TOFD) Technique, will be necessary. The approach will also need to include a programme of non-destructive testing during the lifetime of the ship to ensure that growth of a defect does not exceed the limits of the ECA.

2.3.12 Table 8.2.1 summarises a selection of measures aimed at mitigating the risk of uncontrolled brittle fracture in way of deck and hatch coaming structure. A range of thickness is shown for the different strength grades of steel; where the maximum as-built thickness falls within this range, measures are to be selected as shown in the Table. If the as-built thickness of the hatch coaming structure is below the values contained in the Table, additional measures are not necessary.

Table 8.2.1 Preventive measures to be used in design and construction

Nominal yield strength (N/mm^2)	Thickness (mm)	Measure		
		1	2 (*see* Note 1)	3 (*see* Note 1)
355	$50 < t \leq 85$	Not required	Not required	Not required
	$85 < t \leq 100$	Required	Not required	Not required
390	$50 < t \leq 85$	Required	Not required	Not required
	$85 < t \leq 100$	Required	Required (*see* Note 2)	Required
460	$50 < t \leq 85$	Required	Required (*see* Note 2)	Required
	$85 < t \leq 100$	Required	Required (*see* Note 2)	Required

Key to measures:

Measure 1: This measure is mandatory where required is shown. 100% ultrasonic testing in accordance with Ch 13,2.12 of the Rules for Materials, both application and acceptance criteria, is to be carried out on all block-to-block butt joints of all upper flange longitudinal structural members in the cargo hold region. Upper flange longitudinal structural members include the topmost strakes of the inner hull/bulkhead, the sheerstrake, main deck, coaming plate, coaming top plate, and all attached longitudinal stiffeners

Measure 2: Design based on crack arrest, *see* 2.3.7 and 2.3.8

Measure 3: Design based on crack initiation, *see* 2.3.11

NOTES

1. Measure 2 or Measure 3 is to be applied where ‘required’ is shown.
2. Brittle crack arrest steel to be applied for upper deck along the cargo hold region to prevent crack propagation from the coaming into lower structure.

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